



PCM360DW Condition Management System

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Introduction

ProvibTech's Predictive Plant Condition Management System PCM360DW which consists of PCM360 Condition Management Software and Digital Monitors is capable of performing condition monitoring with digitally captured and transferred waveform, spectrum, and shaft XY vibration measurements. The digital monitors include DTMs and DMs.

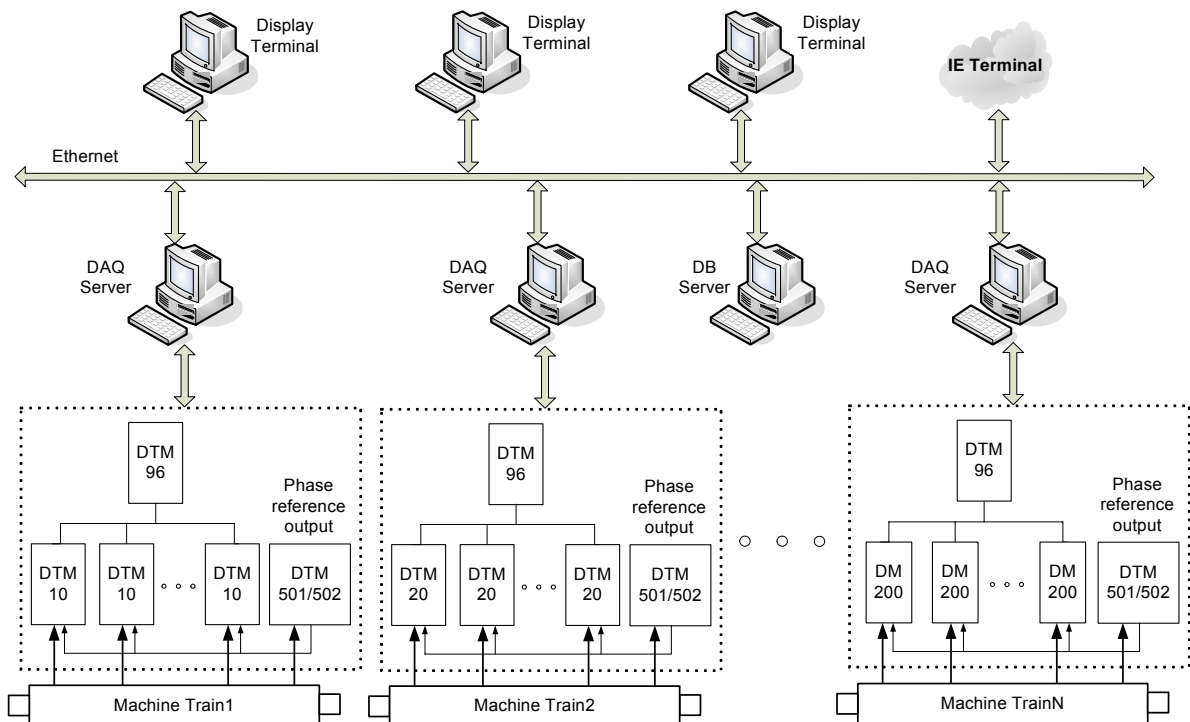
As a Plant Condition Management System, the PCM360DW can collect, store, and analyze machine health condition based on vibration, position, and other process parameters and is capable of transmitting the information over LAN or internet.

The PCM360DW system focuses on dynamic and static data collection. Data is processed digitally and transmitted to the PCM360DW software via the same digital port that transmits Modbus data. Both dynamic and static data can be transmitted together via RS485 or Ethernet.

With the PCM360DW system information concerning the machine status and measured value can be easily and quickly integrated into one system, which making the configuration process simple and intuitive.

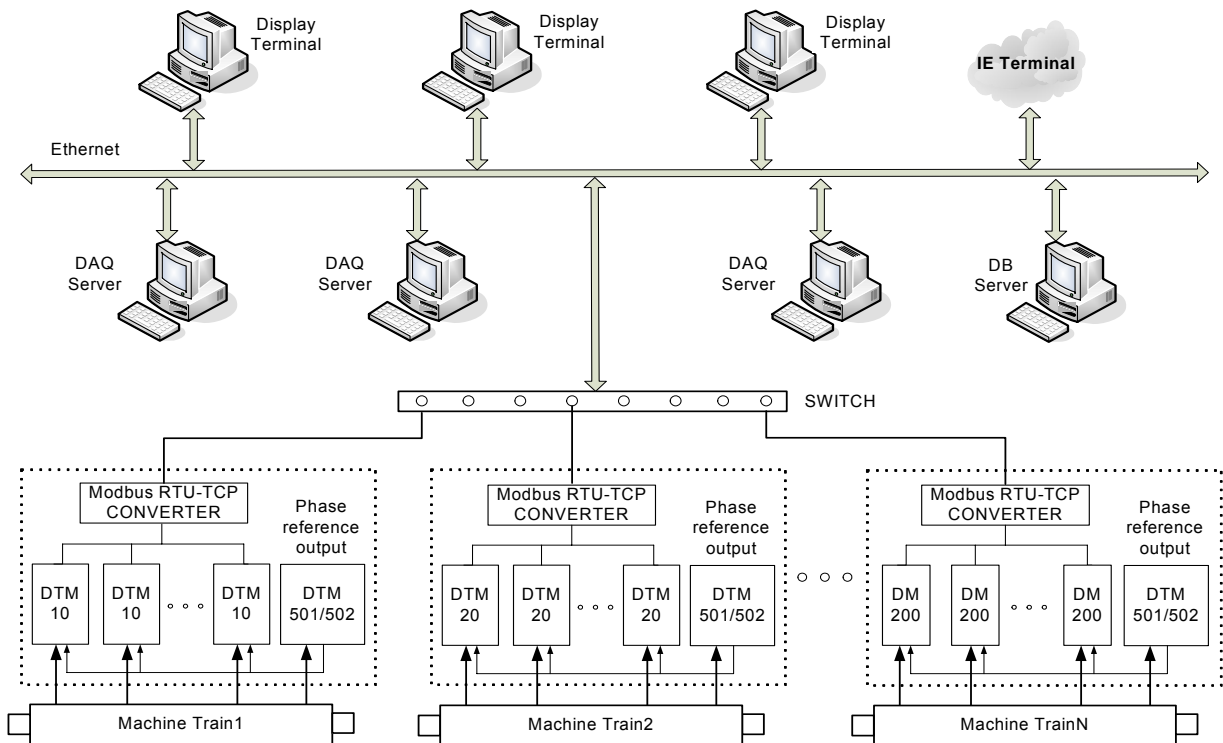
PCM360DW Advantage

- ✓ **MAXIMIZE PRODUCTIVITY** by minimizing machine down time. Predictive maintenance enables plant operators to diagnose early warning signs of machine running problems.
- ✓ **CENTRALIZED DATABASE.** All data flows into a centralized database thus enabling users to manage machine data automatically.
- ✓ **SHARE** machine condition management information among various departments and managers by moving data and not men.
- ✓ **BROWSER/SERVER ARCHITECTURE** enables user to log on the PCM360DW system via any IE terminal.
- ✓ **MODBUS INTERFACE.** Static and Dynamic data can be obtained via standard Modbus RTU or Modbus TCP protocol. The figures below show a typical network system layout with multiple DTMs and/or DMs digital meters. One figure shows RTU network integration and another shows TCP network integration.





PCM360DW Condition Management System



- ✓ **SINGLE DIGITAL PORT FOR BOTH DYNAMIC AND STATIC DATA.** Overalls values, alarms, and system status can be accessed via the standard Modbus protocol. Waveform, spectrum, and shaft XY vibration signals can also be accessed with the same digital port. Our DTMs and DMs capture the raw signal and transmit it digitally to the PCM360DW analysis system. A significant cost saving is realized by eliminating additional cabling, signal conditioning modules, and interface hardware normally needed to acquire vibration signals.
- ✓ **STANDARD ETHERNET NETWORKING.** Data is exchanged via a single digital port. This can be RS485 or Ethernet. Existing standard Ethernet networks in your plant will make the machine status data available plant-wide.
- ✓ **SIMPLIFIED FIELD WIRING.** Field wiring has never been easier with the integrated port for all digital data communications.
- ✓ **PLOTS AND ANALYSIS TOOLS.** Waveform plots, spectrum plots, waterfall plots, shaft XY vibration plots (DM200 only), trend plots, alarm lists, bar graphs, machine mimics and more. 1X, 2X, NOT1X amplitude and phase are available along with NX amplitude and phase information.

FULLY DIGITAL, PROGRAMMABLE AND RELIABLE TRANSMITTER-MONITORS. The DTM and DM series digital transmitter-monitors are designed based on advanced microprocessing technique and could be used for critical machine as well as balance of plant applications. They are easily configured by the related configuration software which developed on Windows platform and is easy to operate. In addition, the built-in system diagnosis and redundancy such as power redundancy, output redundancy and channel redundancy provide a more reliable protection system.

- ✓ **NEVER MISS AN ALARM.** When an alarm occurs, the waveform and spectrum information, together with sensor OK status, alarm status, overall vibration level, gap voltage, and other channels status information, will be automatically stored for further analysis.



PCM360DW Condition Management System

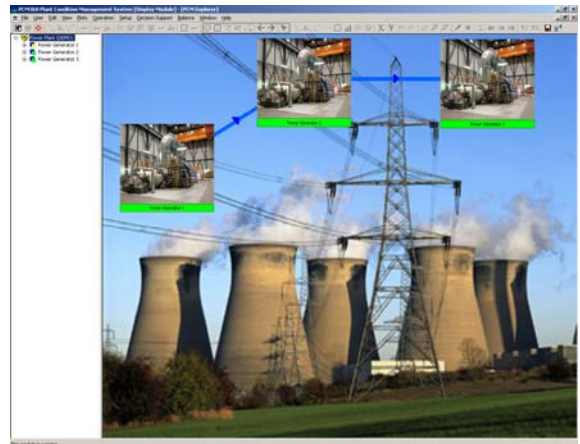
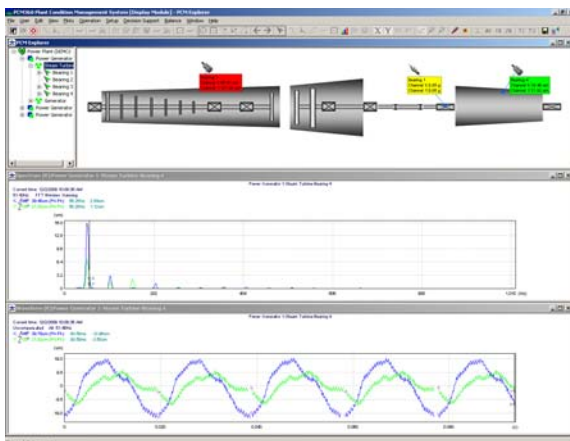
PCM360DW Features

- ✓ User-friendly interface for instant data analysis with minimal training required for field staff.
- ✓ Build on Microsoft® SQL Server software to assure better data management and reliable networking.
- ✓ Dynamic data and static data collection. And the data could be displayed by collected time order.
- ✓ Data from DTM and DM200 channels under the same machine train will be collected synchronously.
- ✓ Up to 800 lines of spectrum resolution with DTM and DM200. The available channel's sampling frequencies are 500Hz, 4 KHz, and 25 KHz.
- ✓ Client/Server architecture let Display terminal has access to database to display historical data.
- ✓ Display the specific status data on Display Terminal.
- ✓ Save plot as .bmp format.
- ✓ Readily integrates with third-party vibration monitors and process monitors with minimum hardware requirements.
- ✓ Transfers data based on OPC technology.
- ✓ Multiple hardware output modules ready for further data transfer and annunciation in relays and current transmission.
- ✓ 24 hour notification through on site alarms, operator interface, and even SMS messaging on GPRS mobile.
- ✓ Flexibility of software and hardware modules allows future modifications at the time of plant expansion.
- ✓ Assist plant managers to take intelligent maintenance decisions based on acquired data.

PCM360DW Additional Information

User-friendly system with integrated layout

- ✓ Software modules work in one unified user interface.



- ✓ Designed for easy installation, configuration, and data analysis.
- ✓ Significantly decreases the learning/training time and cost with user-friendly interface.

Universal vibration interface module

- ✓ Works with Pro vibTech's DTM and DM200 that transfer dynamic waveform data via Modbus RTU or Modbus TCP protocols.
- ✓ Works with other third-party digital meters that transfer overall data via Modbus RTU or Modbus TCP protocols.

Universal process interface module

- ✓ Isolated voltage input
- ✓ 4-20mA input
- ✓ Thermocouple or thermo resistor

Baseline reference

- ✓ Standard baseline data can be collected when machine is running in good condition.
- ✓ Baseline data can be integrated into plots for comparison with newly collected data.
- ✓ Differences will indicate changes in machine condition, providing important information for analysis.

Dynamic plots

- ✓ In addition to just one channel data analysis, each dynamic plot is capable of containing channel X and channel Y data, as well as phase information.
- ✓ Baseline data can also be included in the plot.
- ✓ All the above can be put into one standard plot making comparative analysis much easier.
- ✓ Phase reference information will be displayed on waveform plot and shaft XY vibration plot.



PCM360DW Condition Management System

- ✓ FFT analysis for spectrum plot to improve accuracy of the produced spectrum.
- ✓ Time sensitive dynamic and waterfall trends.

Alarms output and overall output

- ✓ The processed alarms can be programmed to drive relays. Programmable alarm is similar to ladder logic in PLC allowing one to program multiple alarms in logic combination. Each PCM360DW system can drive up to 1,024 relays.
- ✓ The overall measured value of each channel can be programmed to drive a 4-20mA output.

Remote notification to operator's mobile phone

- ✓ Timed status and overall notification with pre-defined machines and measurement points.
- ✓ Notifications containing machine running status and overall vibration values sent when triggered by alarms.

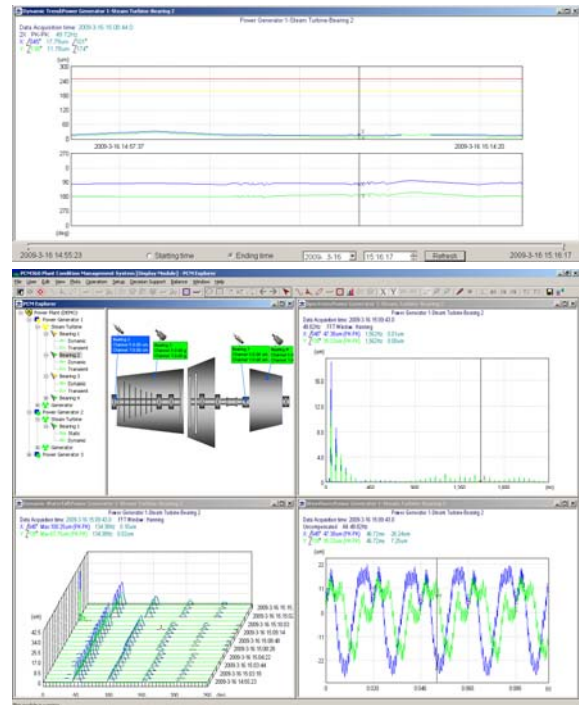
Dynamic and static data collection and analysis

Plots and functions supported by dynamic data

- ✓ Waveform XY with optional baseline plot
- ✓ Spectrum XY with optional baseline plot
- ✓ Full spectrum plot (DM200 only)
- ✓ Shaft XY vibration plot (DM200 only)
- ✓ Bar graph
- ✓ Trend plot
- ✓ Waterfall plot
- ✓ Attach notes
- ✓ Status definition

Plots and functions supported by static data

- ✓ Navigate the static data by time. Each page can display up to 2000 static samples.
- ✓ Bar graph
- ✓ Trend plot



Analysis

- ✓ Machine mimic photo image status view
- ✓ X, Y with baselines and phase reference on one plot
- ✓ Plots with historical and real-time values
- ✓ Alarm lists
- ✓ Overall vibration real-time status lists
- ✓ Bar graphs
- ✓ Printable Plots
- ✓ Save plots as .bmp format
- ✓ Zoom in & Zoom out
- ✓ Auto full-scale
- ✓ Harmonics
- ✓ Sideband
- ✓ FFT Windows
- ✓ Overall, 1X, 2X, NX, NOT1X
- ✓ Baseline contrast
- ✓ SMax on shaft XY vibration plot
- ✓ Synchronized marker on multi-plots
- ✓ Waveform and spectrum visible by double clicking any point on dynamic trend or waterfall plot.
- ✓ Real-time waveform and spectrum plots visible by double clicking the bar graph of any channel.
- ✓ Plot group analysis on measurement points.
- ✓ Plot group analysis on waveforms.
- ✓ Plot group analysis on spectrums.
- ✓ Plot group analysis on shaft XY vibrations.



PCM360DW Condition Management System

Network Ready: Multiple User Access

Microsoft® SQL Server Software

- ✓ PCM360DW adopts the MS SQL Server Software for data storage and management.
- ✓ Database can be attached, backed up, restored, deleted, and detached with a single mouse-click.

Three levels of User Access

- ✓ Administrator: has un-limited access right.
- ✓ Super user: capable of configuring the data acquisition input units and output units.
- ✓ User: analysis and report only.

PCM360DW Data Acquisition Input

PCM360DW data acquisition input module could put all possible plant machine running status information and plant machine process information into the integral system.

Directly interface with the monitors via digital link:

- ✓ DTM
- ✓ DM200

Process/Static data via PT371 universal input module (optional):

- ✓ Any process monitor with analog output
- ✓ Any process sensor with analog output

Additional process data via Modbus or OPC module (optional):

- ✓ Any monitor with Modbus output
- ✓ Any monitor with OPC interface

PCM360DW Data Acquisition Output

ProvibTech supplies various data output modules with digital and analog interface. The output modules offer other plant management systems the information from the PCM360DW system.

Digital Modbus output:

- ✓ Modbus TCP

Programmable relay outputs (optional):

- ✓ Using ladder logic to program relays (PT373) output.
- ✓ Relays are dry contact for ideal contact ratings and isolation.

Programmable current output (optional):

- ✓ 4-20mA output corresponding with any channels overall value.

Remote notification via cellular phone (optional):

- ✓ Notification on any alarm events.
- ✓ Notification on pre-selected channel status.
- ✓ Notification on overall pre-selected channel.

Data sharing on the generic Microsoft® SQL Server:

- ✓ Ready for data transfer via MS SQL Server Software.

PCM360DW Specifications

Frequency Response ($\pm 3\text{dB}$):

DTM10

Normal frequency: 4 - 3.0 KHz

Low frequency: 0.5 - 100Hz

DTM20

Normal Frequency:

Acceleration: 4 - 3.0 KHz

Velocity: 4 - 3.0 KHz

Displacement: 4 - 3.0 KHz

Low Frequency:

Acceleration: 0.5 - 100Hz

Velocity: 0.5 - 100Hz (TM079VD)

Displacement: 0.5 - 100Hz (TM079VD)

High Frequency:

Acceleration: 10 - 20 KHz (PK)

DM200

Standard: 4 - 3.0 KHz

Low frequency: 0.5 - 100Hz

Measurement Range:

Acceleration (PK or RMS):

0 - 20g

Velocity (PK or RMS):

0 - 100 mm/sec (0 - 4 in/sec)

Displacement (PK-PK):

0 - 20 mm (0 - 800 mil)

Unit of Measurement

PK

PK-PK

RMS

AVER

Waveform and Spectrum

Spectrum resolution is 400 lines or 800 lines with DMs or DTMs.

Software is capable of up to 12,800 lines of resolution using additional hardware.



PCM360DW Condition Management System

Storage and Network Database

Microsoft® SQL Server 2008 WorkGroup Edition.

A1: Software updates CD

Operating System

Windows XP SP2 or later version of Windows.

Data Storage Capacity

Unlimited by software.

Limited by hardware storage capacity only.

PCM360DW-MODBUS-AX

PCM360DW-MODBUS is a Modbus RTU and Modbus TCP software module. This module is for both input and output.

AX: Software option

A0*: Digital communication software

A1: Software updates CD

Routing Capacity

Unlimited in plant, machine train, machine, and measurement point.

PCM360-DBM-AX

PCM360-DBM is the database management software module.

AX: Software option

A0*: SQL Database Software

A1: Software updates CD

System Processing Capability

Limit of data acquisition units per system: 240

Limit of Modbus devices per system: 240

Computer Specifications

Please consult ProvibTech for details.

PCM360DW-LIS-AXX-BXX-CX-DX-EX-FX-GX-HX

PCM360DW-LIS is a software module that controls user options and licenses.

AXX: Communication and data acquisition module user licenses

XX: Number of interface modules

BXX: Display module user licenses

XX: Number of simultaneous user displays

CX: Analysis options

C1: Static and dynamic

DX: Remote cellular phone notification (software module only)

D0: With remote notification

D1: No remote notification

EX: Text Output Option

E0: With Text Output

E1: Without Text Output

FX: Digital Communication

F2: With Modbus and digital condition monitoring

GX: OPC Option

G0: With OPC

G1: Without OPC

HX: Web Server Option

H0: With Web service

H1: Without Web service

PCM360DW Technical Support

PCM360DW comes standard with one year technical support. Additional support may be purchased.

- ✓ Free software updates for one year
- ✓ Enable technical support with the software

Order Information (Required)

The PCM360DW On-Line Condition Monitoring System consists of the PCM360DW software package, the digital monitors with vibration sensors, and the network accessories.

PCM360DW Software

PCM360-COM-AX

PCM360-COM is a software module that interfaces with communication and data acquisition hardware.

AX: Software option

A0*: Basic Communication software for DMs and DTMs

A1: Software updates CD

PCM360-DISP-AX

PCM360-DISP is a display and analysis software module.

AX: Software option

A0*: Basic Display Software

PCM-SQL

Microsoft® SQL Server 2008 WorkGroup Edition. Can also be supplied by customer.

Microsoft® Windows Server

Supplied by customer.



PCM360DW Condition Management System

PCM360DW Hardware

The PT360-DAQ On-line Data Acquisition Unit is a fully configured industrial computer or work station, optional 19" LCD display, and signal process modules.

PT360-DAQ-CX-DX-EX

CX: SQL

- C0*: Included
- C1: Not included

DX: Configuration

- D0: As both data acquisition and display system (Industrial computer)
- D1*: As a data acquisition system only (industrial Computer; monitor display is not available)
- D2: As both data acquisition and display system (Work station)
- D3: As a data acquisition system only (work station; monitor display is not available)

EX: Communication kit

- E0*: Modbus TCP
- E1: Modbus RTU (one PCM-485 included)

* Note: Default configuration

PCM-SERV

PCM-SERV is a pre-configured server computer loaded and initialized with Microsoft® Windows server, Microsoft® SQL Server software (software is purchased separately), and PCM360DW Software package (sold separately). Please consult with ProvibTech for computer and Microsoft® Windows server specification and price.

PCM360DW Monitors

DTM10-201-AX-CX-GX-IX-MX-SX

Factory pre-configured for radial vibration (probe driver required)

AX: Full Scale

- A0*: 0 - 200um PK-PK
- A1: 0 - 1,000um PK-PK
- A2: 0 - 100um PK-PK
- A3: 0 - 10mil PK-PK
- A4: 0 - 50mil PK-PK
- A5: 0 - 5.0mil PK-PK
- A6: 0 - 200um PK-PK (0.5 - 100Hz)
- A7: 0 - 1,000um PK-PK (0.5 - 100Hz)
- A8: 0 - 100um PK-PK (0.5 - 100Hz)

CX: Alarms

- C0*: Dual alarms with epoxy sealed relays
- C1: No alarm

GX: Mounting

- G0*: DIN rail mount
- G1: Plate mount

IX: Frequency Response

- I0*: Normal frequency
- I1: Low frequency (0.5 - 100Hz)

MX: Digital Communication

- M1*: With Modbus
- M2: With Modbus and digital condition monitoring

SX: Approvals

- S0*: CE
- S1: CE
- CSA: Class I, Div.2, GrpsABCDT4
- ATEX: II3G, Ex nA II T4
- GOST R: 2Ex nA II T4X

DTM10-202-AX-CX-GX-SX

Factory pre-configured for axial (thrust) position (probe driver required)

AX: Full Scale

- A0*: 1.0 - 0 - 1.0mm (40 - 0 - 40mil)
(Requires TM0180 or other 8mm proximity probe transducer; TM0105 or other 5mm proximity probe transducer.)
- A1: 2.0 - 0 - 2.0mm (80 - 0 - 80mil)
(Requires TM0110 or other 11mm proximity probe transducer)
- A2: 5.0 - 0 - 5.0mm (0.2 - 0 - 0.2inch)
(Requires TM0120 or other 25mm, 35mm proximity probe transducer)
- A3: 12.0 - 0 - 12.0mm (0.5 - 0 - 0.5inch)
(Requires TM0150 or other 50mm proximity probe transducer)

CX: Alarms

- C0*: Dual alarms with epoxy sealed relays
- C1: No alarm

GX: Mount

- G0*: DIN rail mount
- G1: Plate mount

SX: Approvals

- S0*: CE
- S1: CE
- CSA: Class I, Div.2, GrpsABCDT4
- ATEX: II3G, Ex nA II T4
- GOST R: 2Ex nA II T4X



PCM360DW Condition Management System

DTM10-501-AX-CX-FXX-GX-SX

Factory pre-configured for speed/phase Reference (Probe Driver required)

AX: Full Scale

A0: 0 - 1,000 RPM

A1*: 0 - 3,600 RPM

A2: 0 - 6,000 RPM

A3: 0 - 10,000 RPM

A4: 0 - 30,000 RPM

A5: 0 - 50,000 RPM

A6: phase reference output

CX: Alarms

C0*: Dual alarms with epoxy sealed relays

C1: No alarm

FXX: Teeth per Revolution

F01*: 1

FXX: Customer specifies, number of teeth =XX

GX: Mounting

G0*: DIN rail mount

G1: Plate mount

SX: Approvals

S0*: CE

S1: CE

CSA: Class I, Div.2, GrpsABCDT4

ATEX: II3G, Ex nA II T4

GOST R: 2Ex nA II T4X

E06: TM0105, 5m Cable

E07: TM0105, 9m Cable

E08: TM0110, 5m Cable

E09: TM0110, 9m Cable

E10: 11mm Probe, 3300, 5m Cable

E11: 11mm Probe, 3300, 9m Cable

E12: 11mm Probe, 7200, 5m Cable

E13: 11mm Probe, 7200, 9m Cable

GX: Mount

G0*: DIN rail mount

G1: Plate mount

IX: Frequency Response

I0*: Normal frequency

I1: Low frequency (0.5-100Hz)

MX: Digital Communication

M1*: With Modbus

M2: With Modbus and Digital Condition Monitoring

SX: Approvals

S0*: CE

S1: CE

CSA: Class I, Div.2, GrpsABCDT4

ATEX: II3G, Ex nA II T4

GOST R: 2Ex nA II T4X

DTM10-302-AX-CX-EXX-GX-SX

Factory configured for Axial (Thrust) Position (Built-in Probe Driver)

AX: Full Scale

A0*: 1.0 - 0 - 1.0mm (40 - 0 - 40mil)

(Requires TM0180 or other 8mm proximity probe)

A1: 2.0 - 0 - 2.0mm (80 - 0 - 80mil)

(Requires TM0110 or other 11mm proximity probe)

CX: Alarms

C0*: Dual alarms with epoxy sealed relays

C1: No alarm

EXX: Probe and Cable (not included)

E00*: TM0180, 5m Cable

E01: TM0180, 9m Cable

E02: 8mm Probe, 3300, 5m Cable

E03: 8mm Probe, 3300, 9m Cable

E04: 8mm Probe, 7200, 5m Cable

E05: 8mm Probe, 7200, 9m Cable

E06: TM0105, 5m Cable

E07: TM0105, 9m Cable

E08: TM0110, 5m Cable

E09: TM0110, 9m Cable

E10: 11mm Probe, 3300, 5m Cable

E11: 11mm Probe, 3300, 9m Cable

DTM10-301-AX-CX-EXX-GX-IX -MX-SX

Factory pre-configured for radial shaft vibration (with Built-in Probe Driver)

AX: Full Scale

A0*: 0 - 200um PK-PK

A1: 0 - 500um PK-PK

A2: 0 - 100um PK-PK

A3: 0 - 10mil PK-PK

A4: 0 - 25mil PK-PK

A5: 0 - 5.0mil PK-PK

A6: 0 - 200um PK-PK (0.5 - 100Hz)

A7: 0 - 500um PK-PK (0.5 - 100Hz)

A8: 0 - 100um PK-PK (0.5 - 100Hz)

CX: Alarms

C0*: Dual alarms with epoxy sealed relays

C1: No alarm

EXX: Probe and Cable (not included)

E00*: TM0180, 5m Cable

E01: TM0180, 9m Cable

E02: 8mm Probe, 3300, 5m Cable

E03: 8mm Probe, 3300, 9m Cable

E04: 8mm Probe, 7200, 5m Cable

E05: 8mm Probe, 7200, 9m Cable



PCM360DW Condition Management System

E12: 11mm Probe, 7200, 5m Cable

E13: 11mm Probe, 7200, 9m Cable

GX: Mount

G0*: DIN rail mount

G1: Plate mount

SX: Approvals

S0*: CE

S1: CE

CSA: Class I, Div.2, GrpsABCDT4

ATEX: II3G, Ex nA II T4

GOST R: 2Ex nA II T4X

DTM10-502-AX-CX-EXX-FXX-GX-SX

Factory pre-configured for speed/phase reference (Built-In Probe Driver)

AX: Full Scale

A0: 0 - 1,000 RPM

A1*: 0 - 3,600 RPM

A2: 0 - 6,000 RPM

A3: 0 - 10,000 RPM

A4: 0 - 30,000 RPM

A5: 0 - 50,000 RPM

A6: phase reference output

CX: Alarms

C0*: Dual alarms with epoxy sealed relays

C1: No alarm

EXX: Probe and Cable (not included)

E00*: TM0180, 5m Cable

E01: TM0180, 9m Cable

E02: 8mm Probe, 3300, 5m Cable

E03: 8mm Probe, 3300, 9m Cable

E04: 8mm Probe, 7200, 5m Cable

E05: 8mm Probe, 7200, 9m Cable

E06: TM0105, 5m Cable

E07: TM0105, 9m Cable

E08: TM0110, 5m Cable

E09: TM0110, 9m Cable

E10: 11mm Probe, 3300, 5m Cable

E11: 11mm Probe, 3300, 9m Cable

E12: 11mm Probe, 7200, 5m Cable

E13: 11mm Probe, 7200, 9m Cable

FXX: Teeth per Revolution

F01*: 1

FXX: Customer specifies number, number of teeth =XX

GX: Mount

G0*: DIN rail mount

G1: Plate mount

SX: Approvals

S0*: CE

S1: CE

CSA: Class I, Div.2, GrpsABCDT4

ATEX: II3G, Ex nA II T4

GOST R: 2Ex nA II T4X

DTM20-101-AXX-CX-GX-HX-IX-MX-SX

Factory pre-configured Seismic Vibration DTM

AXX: Full Scale

A00: 0 - 200um (8mil) PK-PK

A01: 0 - 500um (20mil) PK-PK

A02: 0 - 100um (4mil) PK-PK

A03: 0 - 250um (10mil) PK-PK

A05: 0 - 125um (5mil) PK-PK

A06*: 0 - 50mm/s (2.0 ips) PK

A07: 0 - 100mm/s (4.0 ips) PK

A08: 0 - 20mm/s (0.8 ips) PK

A11: 0 - 25mm/s (1.0 ips) PK

A12: 0 - 5.0g PK

A13: 0 - 10g PK

A26: 0 - 50mm/s (2.0 ips) RMS

A27: 0 - 100mm/s (4.0 ips) RMS

A28: 0 - 20mm/s (0.8 ips) RMS

A31: 0 - 25 mm/s (1.0 ips) RMS

CX: Alarms

C0*: Dual alarms with epoxy sealed relays

C1: No Alarm

GX: Mounting

G0*: DIN rail mount

G1: Plate mount

HX: Sensors (not included)

H0*: TM0782A or any current mode accelerometer with 100mV/g (A00-A05 not available)

H1: TM0793V or any current mode velocity sensor with 4mV/mm/s (A12, 13 not applicable)

H2: TM079VD (A12, 13 not available)

HXXX: Seismic velocity sensor, Sensitivity = XXXmV/in/sec (A12, 13 not available)

IX: Frequency Response

I0*: Normal frequency (H2 not available)

I1: Low frequency (0.5-100Hz)

I2: High frequency (A12, A13 only with accelerometer)

MX: Digital Communication

M1*: With Modbus

M2: With Modbus and Digital Condition Monitoring



PCM360DW Condition Management System

SX: Approvals

S0*: CE

S1: CE

CSA: Class I, Div.2, GrpsABCDT4

ATEX: II3G, Ex nA II T4

GOST R: 2Ex nA II T4X

*Please refer to DTM catalog for details.

DM200-AXX-BX-CX-DX-EX

Dual channel A/V/D vibration monitor

AXX: Full Scale

A12: 0 ~ 5.0g PK

A13: 0 ~ 10g PK

A40*: 0 ~ 20mm/s RMS

A41: 0 ~ 25 mm/s RMS

A42: 0 ~ 50mm/s RMS

A43: 0 ~ 100mm/s RMS

A46: 0 ~ 1.0 ips RMS

A47: 0 ~ 2.0 ips RMS

A48: 0 ~ 4.0 ips RMS

A50: 0 ~ 20mm/s PK

A51: 0 ~ 25 mm/s PK

A52: 0 ~ 50mm/s PK

A53: 0 ~ 100mm/s PK

A56: 0 ~ 1.0 ips PK

A57: 0 ~ 2.0 ips PK

A58: 0 ~ 4.0 ips PK

A60: 0 ~ 100um PK-PK

A61: 0 ~ 125um PK-PK

A62: 0 ~ 200um PK-PK

A63: 0 ~ 250um PK-PK

A64: 0 ~ 500um PK-PK

A66: 0 ~ 5mil PK-PK

A67: 0 ~ 10mil PK-PK

A68: 0 ~ 20mil PK-PK

BX: Sensor (not include)

B0*: TM0782A, TM0783A, TM0785A or any ICP accelerometer with 100mV/g (A60-A68 not applicable)

B1: TM0793V or any ICP velocity sensor with 4mV/mm/s (A12, 13 not applicable)

B2: TM079VD (A12, 13 not available)

BXXX: Seismic sensor, Sensitivity = XXX

CX: Frequency Response

C0*: Normal Frequency (B2 not applicable)

C1: Low Frequency (B2 only)

DX: Environmental Rating (front panel)

D0*: No rating

D1: IP65 or NEMA 4X (buffered output and settings not Available on front panel)

EX: Digital Communication

E0*: No digital communication

E1: With Modbus

E2: With Modbus and digital condition monitoring

*Please refer to DM200 catalog for details.

RS485 Networking Order Information

DTM96-AX-BX-SX

DTM96 acts as the interface between DTM (or DM) and the PCM360DW software. Each DTM96 enables up to 32 DTM (or DM) modules to be networked together.

AX: Output

A0*: Modbus RS485, RS422, RS232

BX: Mounting

B0*: DIN rail mount

B1: Plate mount

SX: Approvals

S0*: CE

S1: CE

CSA: Class I, Div.2, GrpsABCDT4

ATEX: II3G, Ex nA II T4

GOST R: 2Ex nA II T4X

PCM-485

RS485 module on PCI slot. Each module has two RS485 ports.

Ethernet Order Information

PCM-TCP

Modbus RTU-TCP Converter, which interface DTMs or DMs to an Ethernet network.



Order Information (Optional)

PCM360 Software

PCM360-SMS-AX

PCM360-SMS is a SMS software module.

AX: Software option

A0*: Original version

A1: Software updates CD

PCM360-TextOutput-AX

PCM360-TextOutput is a Text Output software module.

AX: Software option

A0*: Original version

A1: Software updates CD

PCM360-OPC-AX

PCM360-OPC is an OPC software module. This module is for both server and client.

AX: Software option

A0*: OPC communication software (Contains both server and client).

OPC-Server: Offering the PCM360 data for the third party's OPC software.

OPC-Client: Collecting the data from the third party's OPC devices.

A1: Software updates CD.

PCM360-Web Server-AX

PCM360-Web Server is a web service software module.

AX: Software option

A0*: Original version

A1: Software updates CD

PCM360-SUP-AX-BXX

Extended technical support agreement

AX: Additional years

X = Number of additional years

BXX: Machines

XX = Number of machines

* Note: Default configuration

Accessories (Optional)

TM900

Power Converter that converts 110VAC/220VAC to 24VDC. Each TM900 can power up to six DTMs.

Sensor

Vibration sensors or proximity sensors are required for DTMs and DMs.

PCM-SMS

SMS cellular phone message transmission and receiving hardware module. This module works with any GSM system.

PT371

Universal input module, 16 channels (requires PCM360DW-MODBUS-AX).

PT372

4-20mA output module, 4 channels (requires PCM360DW-MODBUS-AX).

PT373

Relay alarm module, 16 channels (requires PCM360DW-MODBUS-AX).



PCM360DW Application Notes

I. PCM360DW Basic System Configuration

A PCM360DW basic system is configured to interface with one package of DTMs.

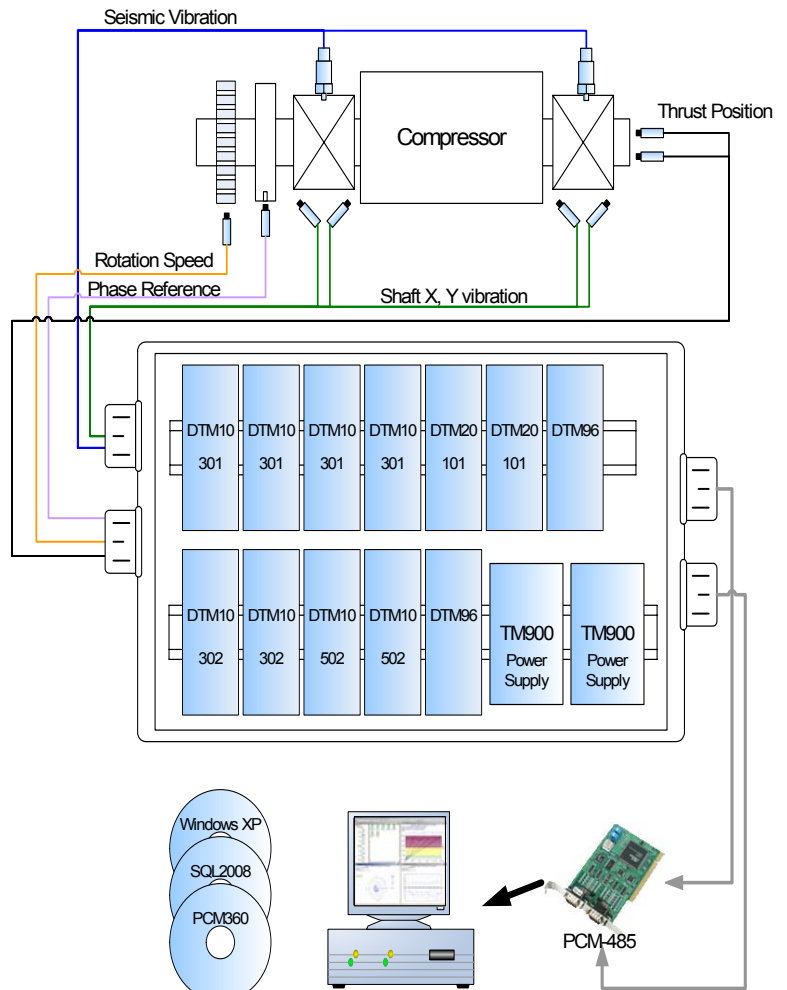
For example: A plant has one compressor to be monitored. The compressor has four proximity probes to measure shaft X and Y vibration; two velocity sensors to measure seismic vibration; two proximity probes to measure thrust position; one proximity probe to measure rotation speed; and one proximity probe to measure phase reference.

Software Required:

- PCM360-COM-A0
- PCM360-DISP-A0
- PCM360-DBM-A0
- PCM360DW-MODBUS-A0
- PCM-SQL
- PCM360DW-LIS-A01-B01-C1-D1-E1-F2-G1-H1

Hardware Required:

- Qty. 1 PT360-DAQ-C1-D0-E1
- Qty. 4 DTM10-301-A0-C0-E00-G0-I0-M2-S1
- Qty. 2 DTM10-302-A0-C0-E00-G0-S1
- Qty. 2 DTM20-101-A06-C0-G0-H1-I0-M2-S1
- Qty. 1 DTM10-502-A1-C0-E00-F60-G0-S1
(rotation speed)
- Qty. 1 DTM10-502-A7-C0-E00-F01-G0-S1
(phase reference)
- Qty. 2 TM900-A0 (power supply)
- Qty. 2 DTM96



This is a 10 channel system. The entire system, with hardware and software, has been put into an industrial computer. This system will perform data acquisition with process data and dynamic data via Modbus. The system is ideal for plant operators, maintenance engineers, and managers that perform general data analysis and maintenance.

The features of the system include:

- ✓ Integral system with one industrial computer.
- ✓ Single user.
- ✓ 6 dynamic channels; 1 phase reference channel, 3 process channels.
- ✓ Interfaces with Industrial Computer through PCM-485.
- ✓ Microsoft® SQL Server 2008 WorkGroup Edition Software.
- ✓ Capable of collecting, analyzing and storing dynamic data.



PCM360DW Condition Management System

Since PCM360DW is a modular system, the system can easily expand into a standard plant-wide condition management system; additional features can be realized by adding more modules.

- ✓ Multiple users access
- ✓ Up to 240 PT360-DAQ
- ✓ Up to 240 Modbus RTU devices
- ✓ Dedicated server computer
- ✓ High frequency data acquisition
- ✓ Hardware output of programmed alarms and 4-20mA
- ✓ Remote access to the system with Citrix™ server
- ✓ Logon the system via IE terminal
- ✓ Interface with any third-party's process data and dynamic data
- ✓ On-site technical service and training

II. PCM360DW Standard Network System Configuration

Example: A plant has 4 compressors like the one in above minimum system. Each compressor has four proximity probes to measure shaft X, Y vibration and two velocity sensors to measure seismic vibration; two proximity probes to measure thrust position; one proximity probe to measure rotation speed and one proximity probe to measure phase reference.

There will be one data acquisition unit, one server; and we assume that the plant has 3 users.

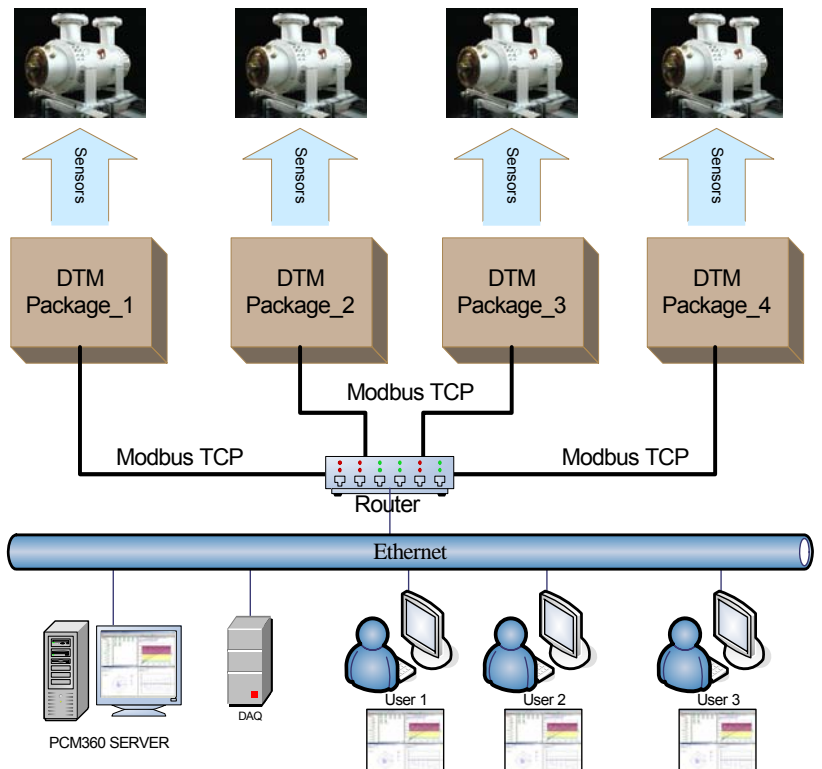
Recommendation: The standard PCM360DW system uses the following modules:

Software Required:

- PCM360-COM-A0
- PCM360-DISP-A0
- PCM360-DBM-A0
- PCM360DW-MODBUS-A0
- PCM360DW-LIS-A01-B03-C1-D1-E1-F2-G1-H1
- PCM-SQL

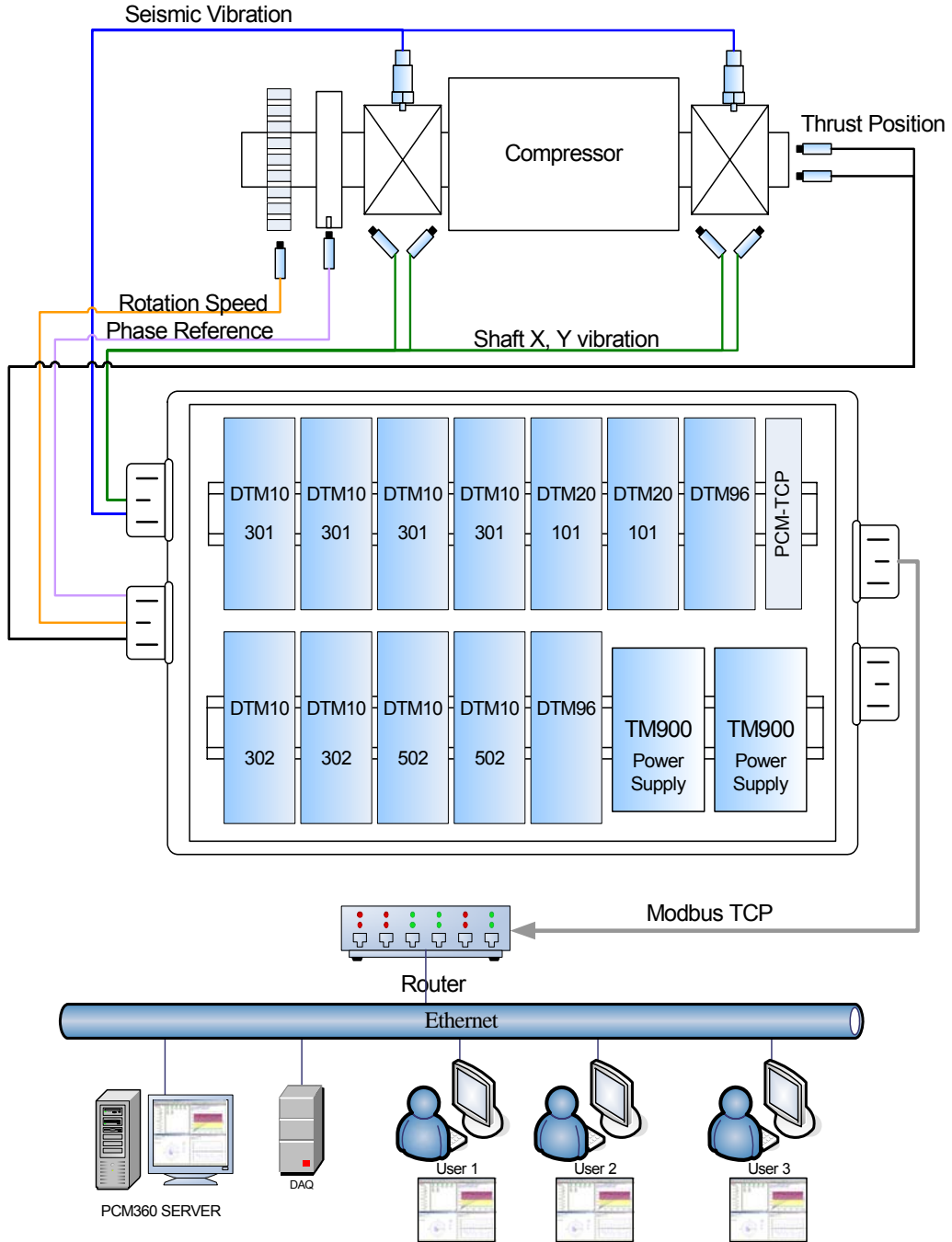
Hardware Required:

- Qty. 1 PT360-DAQ-C1-D1-E0
- Qty. 1 PCM-SERV
- Qty. 3 PCM-DPC
- Qty. 4 PCM-TCP
- Qty. 1 Router
- Qty. 16 DTM10-301-A0-C0-E00-G0-I0-M2-S1
- Qty. 8 DTM10-302-A0-C0-E00-G0-S1
- Qty. 8 DTM20-101-A06-C0-G0-H1-I0-M2-S1
- Qty. 4 DTM10-502-A1-C0-E00-F60-G0-S1
(rotation speed)
- Qty. 4 DTM10-502-A7-C0-E00-F01-G0-S1
(phase reference)
- Qty. 8 TM900-A0 (power supply)
- Qty. 8 DTM96





PCM360DW Condition Management System





Appendix. Optional Accessories

PT371 Universal Input Module

The PT371 is a 16 channel input module.



Signal Inputs:

- Voltage input: 0 - 10V; -5 to +5V.
- Current input: 4 - 20mA (with the shunt resistor).
- Thermocouple or thermo resistors:
- Discrete input: any 0-24V; 0-12V; 0-5V.
- TC: K, E, S, T, N, J, B, R, EU-2.
- Compensation mode: Inner (Specify) and Exterior.
- RTD: Pt100, Cu50, Cu100, BA1, BA2, G.
- Wire Unit: 2-wires, 3-wires.

Data acquisition rate:

1.0 sec

Amplitude A/D resolution:

PT371 module: 12 bit.
0.2% FS.

Power supply:

24VDC +/- 10% @ 150mA

PT372 4-20mA Output Module

The PT372 is a 4 channel 4-20mA output module.



Amplitude A/D resolution:

PT372 module: 12bit

Power supply:

24VDC +/- 10% @ 100mA

Maximum load:

750 ohms

PT373 Relay Module

The PT373 is a 16 channel relay module. The PT373 can be configured for any logic combination of alarms or status of each channel.

The relays are selectable as: energized/de-energized, latching/non-latching and bypass.



Power supply:

24VDC +/- 10% @ 150mA

Relays:

- Seal: epoxy
- Capacity: 0.5A/230VAC/30VDC, resistive load
- Relay type: SPDT
- Isolation: 1000VDC

PCM-SMS Cellular Phone GSM/GPRS Notifier Module

PCM-SMS is a quad-band universal transmission and receiving module that will transmit machine running status and overall about predefined measurement points into any GSM cellular phone.



Power supply:

6 - 40 VDC @ 500mA or 90 - 250 VAC @ 100mA, from 47 - 65 Hz.

Transmit format:

GSM; GPRS

Transmission frequency band:

- 850MHz
- 900MHz
- 1800MHz
- 1900MHz